STATEMENT OF PATRICIA GRACE SMITH, ASSOCIATE ADMINISTRATOR FOR COMMERCIAL SPACE TRANSPORTATION, FEDERAL AVIATION ADMINISTRATION, BEFORE THE COMMITTEE ON COMMERCE, SCIENCE AND TRANSPORTATION SUBCOMMITTEE ON SCIENCE, TECHNOLOGY AND SPACE, UNITED STATES SENATE. MAY 20, 1999.

Mr. Chairman and Members of the Subcommittee:

I welcome the opportunity to testify before you today to discuss the activities of my office. As Associate Administrator for Commercial Space Transportation (AST) at the Federal Aviation Administration (FAA), I am proud of the work we have done, in partnership with Congress, with the commercial space industry and our colleagues in government, to ensure that this growing industry continues to have an impressive safety record. This afternoon I plan to address issues you have identified in your invitation letters and some others I think it appropriate to bring to your attention.

But first I want to thank you, Mr. Chairman, and the Members of this Subcommittee, for the key role you played in securing passage last year of the "Commercial Space Act of 1998" (Pub. L. 105-303, Oct. 28, 1998). The provisions of that Act, particularly those provisions granting the FAA express licensing authority over reentry of reentry vehicles and reusable launch vehicles (RLV's), are extremely important to us and the industry. I will address this area in more detail later in my testimony.

Recent events have created considerable disappointment for the U.S. space launch industry and created much discussion and speculation in the world market. The four

recent failures, and the two previous ones in the last 9 months, are certainly cause for concern and investigation. Unfortunately, given the inherently risky nature of space launch, occasional failures have been a fact of life, particularly in the introduction of new vehicles, technologies, or configurations. This appears to have been a factor in the Delta III and Athena II commercial launch failures.

Investigating teams were immediately established, including both company representatives and outside experts in the two most recent commercial launch mishaps. The FAA is participating as an active observer in the process. Previous experience attests to the fact that these investigations will be rigorous. Based on past performance, there is a high degree of certainty that the problems will be solved successfully, bringing these vehicles back into service. Industry, as a whole, shares the concern and commitment to resolving the problems in a cooperative and collegial spirit.

I would like to emphasize that there were no injuries or damage to third party property, nor were there any violations of the safety provisions of our licenses, a fact definitely worth remembering.

The other recent failures were Titan military missions and each of them appears to represent a different failure mode. The Air Force has established its own investigative process and Acting Secretary Peters has instituted a broader overall review of government launch procedures. The Titan is not marketed commercially and I will defer to my fellow

panel member, General Hinson, in this area.

These recent events should be viewed in the context of the outstanding success of the first launch of the American-led Sea Launch vehicle and the continued availability and the tremendous success record of the proven Atlas, Delta, Taurus and Pegasus vehicles in the U.S. commercial launch fleet.

Extension of "Indemnification"

With respect to needed legislative changes, the FAA is seeking a minimum six year extension of the current payment of excess claims authority, known as "indemnification," for commercial space launches. Continuation of this authority, now scheduled to terminate at the end of this year, is critical to assuring stability and the continued competitiveness of existing and evolving U.S. expendable launch vehicles and to the financial viability of the emerging reusable launch vehicle industry.

Since its enactment in 1988, the U.S. commercial launch industry has relied upon a statutory risk-sharing arrangement that is beneficial to the U.S. commercial launch industry and the government. Congressionally sanctioned risk allocation, including "indemnification," has allowed U.S. industry to compete effectively against foreign launch services providers that offer customers government-supported financial protection from liability.

Termination of the statutory risk-sharing program would mean that launch providers, and their customers and contractors, bear a very significant risk of liability and the cost of insurance to manage that additional risk, assuming excess insurance coverage is even available. The FAA has been advised that, assuming the world insurance market is willing to provide coverage in place of government-supported indemnification, cost of insurance could increase as much as $1.5 million per launch.

Imposition of additional costs of this magnitude, resulting from the government's withdrawal of support for the U.S. industry, could affect the ability of U.S. operators to attract and maintain customers who might instead look to foreign suppliers rather than face increased cost or risk of liability.

However, the ability to replace indemnification under the CSLA with private insurance is not simply a matter of transferring costs or risks. The availability of excess insurance would depend upon the willingness of any number of foreign insurers to underwrite the risk and their ability, in turn, to reinsure the risk. The difficulty of tapping into worldwide insurance capacity for new vehicles may be further aggravated by rigid munitions export controls on technology, the details of which must be transmitted to foreign insurers before they will agree to underwrite risks. The combination of recent events suggests that excess insurance may become increasingly expensive, or even unavailable, as a practical matter, even in a so-called "soft" market.

The recent failures experienced by the U.S. launch industry demonstrate the continued need for a congressionally sanctioned risk-sharing program. Technological challenges still confront operators of existing and modified expendable launch vehicles. The launch of an expendable launch vehicle remains an extremely hazardous event and the United States cannot afford to be complacent based on past successes. The indemnification provisions of the CSLA were enacted in 1988 to address the unique potential for devastating losses that can result from expendable launch vehicles, including vehicle models that had been flying successfully for years. It remains true today that each flight of an expendable vehicle is effectively a trial flight of that vehicle and carries with it the potential for catastrophic failure and the prospect of unbounded liability. Thus, the need remains for commercially operated launch vehicles to remain eligible for indemnification in order to bound the potentially catastrophic risks confronting launch operators. This will enable them to offer competitive services, at competitive prices, in a market where international launch services providers offer government-backed indemnification and relief from liability. Extending the indemnification provisions of the statute would send a strong, clear signal that the U.S. government continues to support this industry in the international arena.

It is equally true that the viability of emerging commercial reusable launch technology will depend, in large part, on continuation of the financial safety net that has proven so effective in fostering a competitive commercial launch industry for the past ten years. These new entrants deserve the same support that has proven crucial for the more

established members of the launch industry.

The Commercial Space Act of 1998 granted to the FAA licensing authority over reentry of reentry vehicles, including reusable launch vehicles. As part of that authority, the statutory risk allocation scheme would also apply to licensed RLV missions. However, unless extended, the indemnification procedure of the Commercial Space Launch Act will apply only to licensed launches and reentries of reusable launch vehicles for which an application has been received and accepted by December 31, 1999. Given the level of complexity of this new technology and the public safety issues that must be addressed in an application, it is reasonable to anticipate that no RLV operator would be prepared to submit a complete application by the end of this year and therefore none would be eligible for indemnification. Continuation of indemnification is absolutely critical to preserving investor confidence in this new technology and the ability to raise and leverage private capital investment.

For these reasons, AST's number one legislative priority this year is extension of the current statutory indemnification authority for six years or longer.

Further Legislative Changes Needed

I have already identified extension of the indemnification provision as the critical legislative action required by the industry this year. Earlier this year the FAA submitted suggested legislative amendments to Congress, including the repeal of a provision enacted

as part of the Commercial Space Act of 1998 that requires us to set uniform guidelines for government agencies.

Section 70111 of title 49 directs the Secretary of Transportation to encourage the acquisition by the private sector or State governments of surplus Federal launch or reentry property or Federal launch or reentry services that are not needed for public use, with the price for such property or services to be set by the agency making the property or service available.

The price is determined in consultation with DOT and on the basis of the direct cost of the property or service. It also requires DOT to set uniform guidelines for all Federal agencies in implementing this provision. We did not seek this authority to establish uniform guidelines and believe that it is unnecessary. Consistent application of the requirements of section 70111 can be achieved through consultation with other agencies in the normal course of business.

Finally, the President's Budget for Fiscal Year 2000 proposes to fund the Office at a level of $6,838,000, a 3.6 percent increase over the level enacted in the FY 2000 authorization contained in the Commercial Space Launch Act of 1998, $6,600,000. We ask that the current authorization be raised to make the authorization and the President’s request consistent.

SATMS and Reusable Launch Vehicle Regulations

Following the industry review of the reusable safety guidelines, my office completed the development of a Notice of Proposed Rulemaking for Reusable Launch Vehicle and Reentry Licensing Regulation which was published on April 21, 1999. FAA is seeking comments on this proposed rulemaking through July 20, 1999. AST is proud of accomplishing this task within the time frame requested by Congress. In parallel with this effort, my office has been developing an FAA Strategic Plan Project entitled the FAA Space and Air Traffic Management System (SATMS). This project has resulted in the recognition that a system that plans for and accommodates new uses by developing greater capacity is the required system of the future.

On May 6, we held the first SATMS stakeholders meeting of representatives from the space industry, the aviation industry, the Department of Defense (DoD) and the FAA. This three hour session provided a thorough review of the recently published FAA Commercial Space Transportation Concept of Operations in the National Airspace System in the Year 2005. This document is supportive of the FAA's efforts to achieve an efficient, modernized National Airspace System inclusive of commercial space transportation in the next century.

The FAA, in partnership with industry, is moving ahead in fashioning a regulatory program to address public safety issues presented by reusable launch vehicle technology development. The FAA has also issued draft interim safety guidance to inform

prospective RLV operators of the FAA's approach to evaluating mission risk. As part of this effort, the FAA hosted two government/industry meetings to gather additional information that would assist the agency in responding to public safety issues presented by RLV technology.

The FAA is supported by the Commercial Space Transportation Advisory Committee (COMSTAC) in its efforts. A COMSTAC working group, dedicated to RLV technology, was tasked to develop recommendations on evolving safety issues. Its report on RLV safety evaluation was adopted by the full COMSTAC earlier this month.

Overview of Launch Activities and Future Outlook

Early in the first term of the Clinton-Gore Administration, the President recognized the critical importance of space transportation to our national security, scientific, technical, commercial, and foreign policy goals The President's 1994 National Space Transportation Policy established a clear division of responsibilities and set the course for the future. DoD is improving and evolving the current fleet of ELVs, while NASA is improving the Shuttle and developing and demonstrating RLV technologies. Both agencies were directed to involve the U.S. commercial space sector as partners, participants, and investors in these programs.

The Administration's commitment to the stable and predictable commercial space policy environment first put into place under the Reagan and Bush Administrations has made it

possible for U.S. commercial launch companies to prosper. They have cut their ELV processing times by as much as 40%--increasing their launch capacity and lowering their prices. They have invested well over $1 billion in new commercial launchers like the Atlas III and Delta III, Sea Launch and others. And as a result, the U.S. commercial space launch industry continues to operate at or near its capacity, with a larger share of the world's commercial launch market than any other nation on Earth. Its revenues each year have grown from roughly $300 million in 1993, to more than $600 million in 1996, and topping $1 billion for the first time in 1998. Four states now have FAA-licensed non-federal spaceports, and Florida in particular has invested well over $100 million to develop space-related facilities to stimulate more growth.

In 1998, U.S. launch providers conducted 22 launches licensed by the FAA, an increase of 29 percent over the 17 conducted in 1997, and double the number conducted in 1996. Licensed launches accounted for 61 percent of the United States' 36 total launches last year, which included government launches of the Space Shuttle and other civil and military payloads. Revenues from the 22 FAA-licensed launches reached $1.119 billion in 1998, a 19 percent increase over 1997 revenues of $940 million.

Of the 22 FAA-licensed launches in 1998, 17 were conducted for commercial or international customers and five were conducted for U.S. Government agencies. Of the commercial launches, seven were to geostationary orbit (GEO) and 10 placed spacecraft in low Earth orbit (LEO). Prior to 1997, commercial spacecraft were only operated in GEO, so the high number of commercial launches to LEO in the past two years represents

a significant expansion of launch demand.

There has been a lot of discussion about U.S. competitiveness in the commercial launch market. For the past five years, U.S. launch providers' share of the market has been steadily increasing, from a 29 percent share in 1994 to 47 percent of the market in 1998. Foreign launch providers conducted the remaining launches, led by Europe's Arianespace with nine for a 25 percent share, Russia with five for a 14 percent share, China with four for 11 percent and Ukraine with one launch, or three percent.

However, percent market share tells only one side of the story. The other side is revenue earned, which reached $2.1 billion for all the commercial launches worldwide last year. While the U.S. has increased its market share over the past few years, it has done so by capturing a large percentage of the emerging market for launches to low Earth orbit, which are of less monetary value. As a result, U.S. providers earned only 43 percent of the revenues, versus 47 percent of the launches. Europe's Arianespace, however, earned 36 percent of the revenues with only 25 percent of the launches by dominating the market for launches to geosynchronous orbit, which cost more. On a positive note, U.S. launch providers have captured a large portion of the emerging market for low Earth orbit launches because they offer a more diverse range of launch vehicles for an increasingly diverse set of satellite customers.

LEO and GEO Market Assessment

Just two weeks ago, the FAA--along with COMSTAC--announced our latest commercial

space transportation forecasts. These forecasts project that an average of 51 commercial launches per year will occur worldwide through 2010. This is an increase of over 40 percent from the 36 commercial launches conducted worldwide in 1998. In more detail, the forecasts project that on average each year the following types of launches will be conducted:

- 25 launches of medium-to-heavy launch vehicles to geostationary transfer orbit (GTO) annually;
- 15 launches of medium-to-heavy launch vehicles to low, medium, and elliptical Earth orbits (LEO/MEO/ELI) annually; and
- 11 launches of small launch vehicles to low Earth orbit (LEO) annually.

The number of launches is expected to peak at 56 in 2003 and again in 2006 with 58 launches. If U.S. launch providers continue to win their current share of the world market, they would conduct an average of 24 commercial launches a year from U.S. launch sites. One trend identified is the launching of larger numbers of LEO satellites on larger vehicles, such as the Atlas V and Delta IV, somewhat reducing the net number of launches.

Regulatory Activities

The FAA has been making significant progress on the regulatory front:

- August 1998: Release of the final rule on Financial Responsibility Requirements for Licensed Launch Activities that became effective on October 26, 1998.
- April 21, 1999: Published the Commercial Space Transportation Licensing

Regulations Final Rule, which addresses licensing requirements generally, and licensing for launches from Federal launch ranges in particular. This is well in advance of the statutory deadline of July 28, 1999 for publication of this final rule.

- April 21, 1999: Responding to a congressional mandate, we issued the NPRM for the Licensing of Reusable Launch Vehicles and Reentry vehicles. This major accomplishment was achieved in advance of the six-month deadline imposed by the Congress.
- April 21, 1999: Issued two draft Advisory Circulars providing detailed guidance for industry compliance with the approach to limiting risk to public safety contained in the reentry NPRM.
- Summer 1999: Expect publication of a Notice of Proposed Rulemaking (NPRM) on Licensing Safety Requirements for Operation of a Launch Site.
- Summer 1999: Consistent with the licensing of reentry operations, the office has drafted an NPRM on Financial Responsibility Requirements for Licensed Reentry Activities.
- In developing an NPRM on Licensing and Safety Requirements for Launches from non-Federal Launch Sites, we are obtaining technical feedback from the Federal ranges.

FAA's Commercial Space Transportation regulatory mission is a challenging one. As we strive to be proactive and responsive to the needs of this important sector of the aerospace industry, AST is creating a regulatory regime that protects public safety while enabling the industry to evolve its technology and bring its products to the marketplace with minimum regulatory burden.

Future Launch Vehicles

Despite the recent disappointments, we still believe that the U.S. launch industry can remedy these problems and compete vigorously in the international market. Some of our

current difficulties stem from ambitious efforts by the industry to improve our technical capabilities and reduce the cost of access to space. In addition, the Administration has pursued policies resulting in a robust RLV technology program at NASA and the development of the evolved expendable launch vehicle (EELV) program through DoD. The RLV vehicles are designed to make a round-trip to and from low earth orbit at lower cost per pound to orbit than ever thought possible.

A number of upgrades and new programs are being implemented which are expected to help U.S. launch vehicles be more competitive, particularly for the larger launches to GEO. Currently, the largest U.S. commercial launch vehicle, Atlas 2AS, cannot accommodate the larger, heavier commercial satellites being launched today. The U.S. launch industry will offer this capability with the new Delta 4 and Atlas 5 EELVs, which are scheduled to come online in the 2001 timeframe.

At the same time, U.S. aerospace companies have formed a number of joint ventures. These international ventures position U.S. companies to benefit from the globalization of commercial launch services.

Another important trend is the increasing procurement of commercial launch services by the U.S. Government, saving the Government--and the taxpayer--money. This trend leads toward more standardization of launch vehicle configurations and operations, which in turn improves efficiency and increases the competitiveness of U.S. commercial launch providers.

The Ranges

The Air Force is diligently working to maintain and modernize its launch base and range infrastructure to meet the Nation's needs now and in the future. This and other issues are the focus of an interagency review under the leadership of the Office of Science and Technology Policy and the National Security Council. Participants include the Air Force, FAA, NASA and the National Reconnaissance Office.

The FAA has a strong and continuing interest in issues surrounding range transition initiatives because, to date, the FAA has relied on the Federal launch ranges to achieve launch safety for the great majority of FAA licensed launches. In the late 1980's, we conducted an assessment of the baseline capabilities of the federal ranges and found that they satisfied safety requirements. The FAA issues its launch licenses based on that capability and those resources, and is therefore very interested in possible transitions and their potential impacts on the FAA's licensing process and its own resources. Any changes must take place in a phased, orderly manner.

The FAA is already contemplating alternatives that may come out of this review, including an expanded FAA presence in safety oversight at the federal ranges. We take great pride in our ability to meet, with our existing resources, our 180-day deadline on license application reviews. And, we want to continue to facilitate industry's growth. New resources in our budget request will help us continue to carry out our mission effectively in the near term. We look forward to the interagency review and your input into how we can best meet U.S. space transportation needs into the future.

Mr. Chairman, that concludes my testimony. I would be happy to answer any questions the Committee may have.